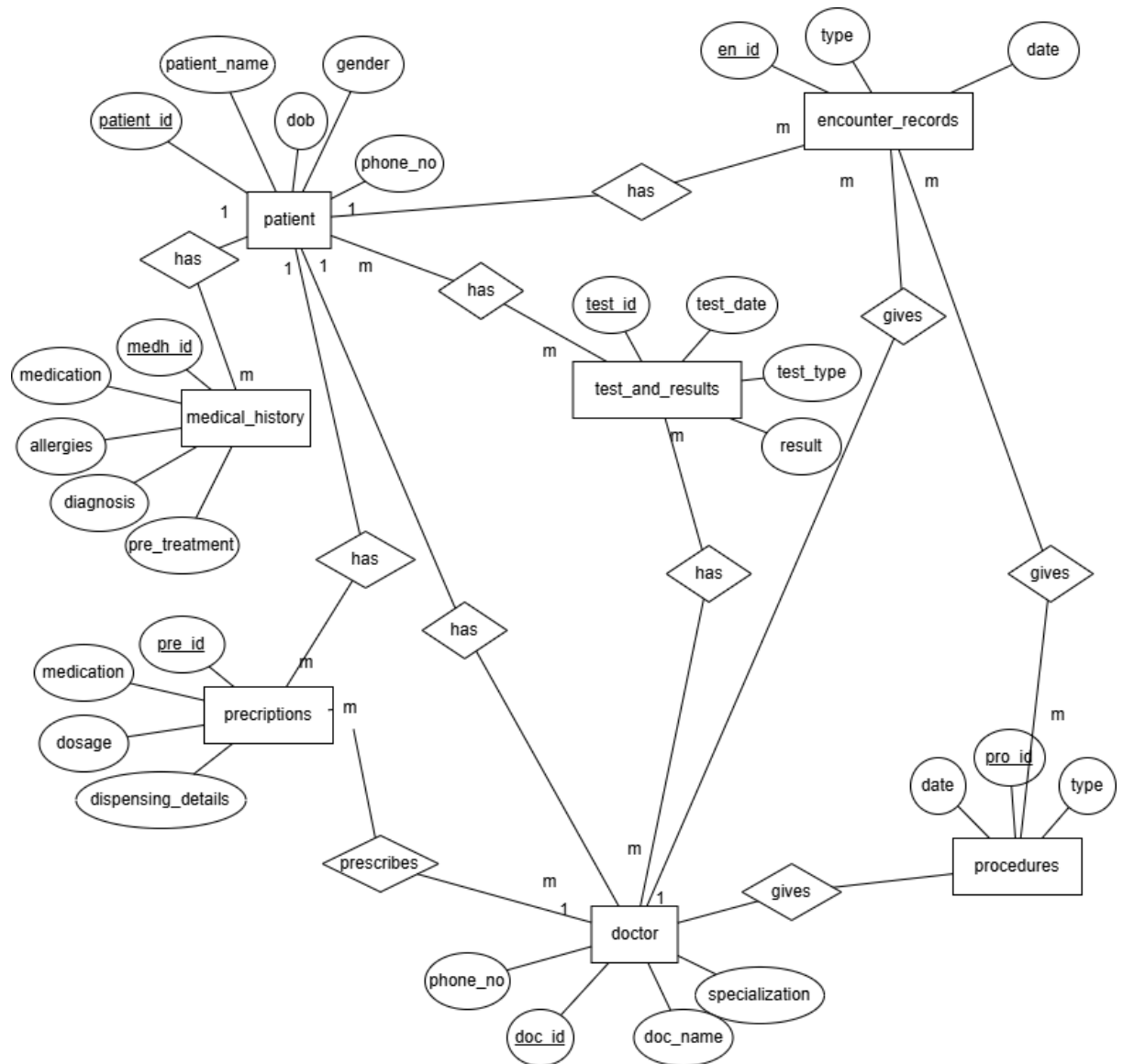


Case Study

Problem Statement: Database Design for Healthcare Records

1. Entity Relationship Diagram



Case Study

2. Database structure and tables:

```
mysql> desc patient;
```

```
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| patient_id     | int           | NO   | PRI | NULL     |       |
| patient_name   | varchar(50)   | YES  |     | NULL     |       |
| gender         | varchar(10)   | YES  |     | NULL     |       |
| dob            | date          | YES  |     | NULL     |       |
| phone_no       | bigint        | YES  |     | NULL     |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

```
mysql> select * from patient;
```

```
+-----+-----+-----+-----+-----+-----+
| patient_id | patient_name | gender | dob          | phone_no |
+-----+-----+-----+-----+-----+-----+
|          1 | Aarav Mehta  | Male   | 1990-05-15  | 9876543210 |
|          2 | Ishita Sharma | Female | 1988-11-23  | 9123456789 |
|          3 | Raj Verma    | Male   | 1975-03-10  | 9988776655 |
|          4 | Sneha Reddy  | Female | 1995-07-19  | 9012345678 |
|          5 | Karan Patel  | Male   | 1982-12-30  | 8765432109 |
|          6 | Diya Nair    | Female | 1993-09-25  | 9112233445 |
|          7 | Arjun Singh  | Male   | 1980-01-05  | 9090909090 |
|          8 | Priya Desai  | Female | 1991-04-08  | 9876512345 |
|          9 | Rohan Joshi  | Male   | 1985-06-12  | 9321654987 |
|         10 | Neha Kapoor  | Female | 1997-02-20  | 9123459876 |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

```
mysql> desc doctor;
```

```
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| doc_id         | int           | NO   | PRI | NULL     |       |
| doc_name       | varchar(50)   | YES  |     | NULL     |       |
| phone_no       | bigint        | YES  |     | NULL     |       |
| specialization | varchar(100)  | YES  |     | NULL     |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

```
mysql> select * from doctor;
```

```
+-----+-----+-----+-----+-----+
| doc_id | doc_name          | phone_no | specialization |
+-----+-----+-----+-----+-----+
|       1 | Dr. Ravi Kumar    | 9988771122 | Cardiologist   |
|       2 | Dr. Anjali Menon  | 9876544433 | Dermatologist  |
|       3 | Dr. Suresh Gupta  | 9345612345 | Orthopedic     |
|       4 | Dr. Meena Iyer    | 9765432198 | Pediatrician   |
|       5 | Dr. Ajay Singh    | 9988776655 | Neurologist    |
|       6 | Dr. Lakshmi Rao   | 9456123789 | ENT Specialist  |
+-----+-----+-----+-----+-----+
```

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```
|      7 | Dr. Vishal Thakur | 9654321789 | General Physician |
|      8 | Dr. Reema Das      | 9345678901 | Gynecologist      |
|      9 | Dr. Nikhil Shah    | 9988665544 | Pulmonologist      |
|     10 | Dr. Swati Pandey   | 9123456701 | Psychiatrist       |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

```
mysql> desc procedures;
```

```
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| pro_id     | int           | NO   | PRI | NULL    |       |
| patient_id | int           | YES  | MUL | NULL    |       |
| type       | varchar(100)  | YES  |     | NULL    |       |
| date       | date          | YES  |     | NULL    |       |
| doc_id     | int           | YES  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

```
mysql> select * from procedures;
```

```
+-----+-----+-----+-----+-----+-----+
-----+
| pro_id | patient_id | type                | date          |
doc_id |
+-----+-----+-----+-----+-----+-----+
-----+
|      1 |          1 | ECG                 | 2023-01-10 |
1 |
|      2 |          2 | Skin Biopsy         | 2023-02-15 |
2 |
|      3 |          3 | Knee Surgery        | 2022-12-05 |
3 |
|      4 |          4 | Tonsil Removal      | 2023-03-12 |
6 |
|      5 |          5 | Brain MRI           | 2023-04-18 |
5 |
|      6 |          6 | Ear Cleaning        | 2023-05-22 |
6 |
|      7 |          7 | Annual Checkup      | 2023-06-10 |
7 |
|      8 |          8 | Pelvic Ultrasound   | 2023-07-08 |
8 |
|      9 |          9 | Chest X-ray         | 2023-08-02 |
9 |
|     10 |         10 | Mental Health Evaluation | 2023-09-25 |
10 |
+-----+-----+-----+-----+-----+-----+
-----+
10 rows in set (0.00 sec)
```

```
mysql> desc test_and_results;
```

Case Study

```
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| test_id    | int           | NO   | PRI | NULL    |       |
| patient_id | int           | YES  | MUL | NULL    |       |
| test_type  | varchar(100)  | YES  |     | NULL    |       |
| test_date  | date          | YES  |     | NULL    |       |
| result     | varchar(255)  | YES  |     | NULL    |       |
| doc_id     | int           | YES  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

```
mysql> select * from test_and_results;
```

```
+-----+-----+-----+-----+-----+-----+
-----+-----+
| test_id | patient_id | test_type      | test_date  | result
| doc_id |
+-----+-----+-----+-----+-----+-----+
-----+-----+
|      1 |          1 | Blood Pressure | 2023-01-10 | 140/90
|      1 |
|      2 |          2 | Allergy Test   | 2023-02-16 | Positive
|      2 |
|      3 |          3 | HbA1c          | 2022-12-10 | 7.5%
|      3 |
|      4 |          4 | Throat Swab    | 2023-03-13 | Bacterial
|      4 |
|      5 |          5 | Lipid Profile  | 2023-04-19 | High LDL
|      5 |
|      6 |          6 | Joint X-ray    | 2023-05-23 | Normal
|      6 |
|      7 |          7 | CBC            | 2023-06-11 | Within
range      |          7 |
|      8 |          8 | TSH            | 2023-07-09 | Elevated
|      8 |
|      9 |          9 | Spirometry     | 2023-08-03 | Mild
obstruction |          9 |
|     10 |         10 | Psych Eval     | 2023-09-26 | Mild
anxiety    |         10 |
+-----+-----+-----+-----+-----+-----+
-----+-----+
10 rows in set (0.00 sec)
```

```
mysql> desc prescriptions;
```

```
+-----+-----+-----+-----+-----+-----+
--+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
--+
```

Case Study

```
| pre_id          | int          | NO   | PRI | NULL      |
|
| patient_id      | int          | YES  | MUL | NULL      |
|
| medication      | varchar(255) | YES  |     | NULL      |
|
| dosage          | varchar(50)  | YES  |     | NULL      |
|
| dispensing_details | varchar(255) | YES  |     | NULL      |
|
| doc_id          | int          | YES  | MUL | NULL      |
|
+-----+-----+-----+-----+-----+-----+
--+
6 rows in set (0.00 sec)
```

```
mysql> select * from prescriptions;
+-----+-----+-----+-----+-----+-----+
----+-----+
| pre_id | patient_id | medication      | dosage      | dispensing_details | doc_id |
+-----+-----+-----+-----+-----+-----+
----+-----+
|      1 |          1 | Amlodipine      | 5mg         | Once daily        |      1 |
|      1 |          1 |                  |             |                   |      1 |
|      2 |          2 | Loratadine      | 10mg        | At night          |      2 |
|      2 |          2 |                  |             |                   |      2 |
|      3 |          3 | Glibenclamide   | 5mg         | Twice daily       |      3 |
|      3 |          3 |                  |             |                   |      3 |
|      4 |          4 | Azithromycin    | 500mg       | Three days        |      4 |
|      4 |          4 |                  |             |                   |      4 |
|      5 |          5 | Simvastatin     | 20mg        | Bedtime           |      5 |
|      5 |          5 |                  |             |                   |      5 |
|      6 |          6 | Naproxen        | 250mg       | After meals       |      6 |
|      6 |          6 |                  |             |                   |      6 |
|      7 |          7 | Calpol          | 500mg       | As needed         |      7 |
|      7 |          7 |                  |             |                   |      7 |
|      8 |          8 | Eltroxin        | 100mcg      | Empty stomach     |      8 |
|      8 |          8 |                  |             |                   |      8 |
|      9 |          9 | Asthalin        | Inhaler     | Before activity   |      9 |
|      9 |          9 |                  |             |                   |      9 |
|     10 |         10 | Escitalopram    | 10mg        | Daily morning     |     10 |
|     10 |         10 |                  |             |                   |     10 |
+-----+-----+-----+-----+-----+-----+
----+-----+
10 rows in set (0.00 sec)
```

```
mysql> desc medical_history;
+-----+-----+-----+-----+-----+-----+
--+
```

Case Study

```

| Field                | Type                | Null | Key | Default |
Extra |
+-----+-----+-----+-----+-----+-----+
--+
| medh_id              | int                 | NO   | PRI | NULL    |
|
| patient_id           | int                 | YES  | MUL | NULL    |
|
| medication            | varchar(255)        | YES  |     | NULL    |
|
| allergies             | varchar(255)        | YES  |     | NULL    |
|
| diagnosis             | varchar(255)        | YES  |     | NULL    |
|
| previous_treatment    | varchar(255)        | YES  |     | NULL    |
|
+-----+-----+-----+-----+-----+-----+
--+
6 rows in set (0.00 sec)

```

```
mysql> select * from medical_history;
```

```

+-----+-----+-----+-----+-----+-----+
-----+-----+
| medh_id | patient_id | medication      | allergies | diagnosis
| previous_treatment |
+-----+-----+-----+-----+-----+-----+
-----+-----+
|      1 |           1 | Aspirin         | None      |
Hypertension | Lifestyle changes |
|      2 |           2 | Cetirizine      | Dust      | Allergic
Rhinitis | Antihistamines |
|      3 |           3 | Metformin       | None      | Diabetes
| Insulin therapy |
|      4 |           4 | Amoxicillin     | Penicillin | Throat
infection | Home remedies |
|      5 |           5 | Atorvastatin    | None      | High
cholesterol | Diet control |
|      6 |           6 | Ibuprofen       | NSAIDs    | Joint pain
| Physiotherapy |
|      7 |           7 | Paracetamol     | None      | Fever
| Hydration |
|      8 |           8 | Levothyroxine   | None      | Thyroid
disorder | Tablet daily |
|      9 |           9 | Salbutamol      | Pollen    | Asthma
| Inhaler use |
|     10 |          10 | Sertraline      | None      | Anxiety
| Talk therapy |
+-----+-----+-----+-----+-----+-----+
-----+-----+

```

```
mysql> desc encounter_records;
```

Case Study

```
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| en_id      | int           | NO   | PRI | NULL    |       |
| patient_id | int           | YES  | MUL | NULL    |       |
| doc_id     | int           | YES  | MUL | NULL    |       |
| type       | varchar(50)   | YES  |     | NULL    |       |
| date       | date          | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

```
mysql> select * from encounter_records;
```

```
+-----+-----+-----+-----+-----+-----+
| en_id | patient_id | doc_id | type          | date          |
+-----+-----+-----+-----+-----+-----+
| 1     | 1          | 1      | Outpatient    | 2023-01-10    |
| 2     | 2          | 2      | Outpatient    | 2023-02-15    |
| 3     | 3          | 3      | Emergency     | 2022-12-05    |
| 4     | 4          | 4      | Outpatient    | 2023-03-12    |
| 5     | 5          | 5      | Consultation  | 2023-04-18    |
| 6     | 6          | 6      | Outpatient    | 2023-05-22    |
| 7     | 7          | 7      | General Check | 2023-06-10    |
| 8     | 8          | 8      | Outpatient    | 2023-07-08    |
| 9     | 9          | 9      | Emergency     | 2023-08-02    |
| 10    | 10         | 10     | Psych Consult | 2023-09-25    |
+-----+-----+-----+-----+-----+-----+
```